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LOW FREQUENCY INVERTER FED  
BY A HIGH FREQUENCY AC CURRENT SOURCE

Field of the Invention

*This application is a 371 of PCT/IL03/0007401/30/2003*  
The present invention relates to the field of power switching inverters. More particularly, the present invention relates to a method and apparatus for generating a low frequency AC current for driving linear or nonlinear loads, and in particular for driving arc type lamps commonly known as High Intensity Discharge (HID) lamps.

Background of the Invention

Currently, there are several types of switch mode converters and inverters, which are widely used for DC-to-DC, DC-to-AC, AC-to-DC and AC-to-AC power conversion. Currently, there are loads, the operation of which is optimized and efficiency maximized, if driven by special drive signal. For example, High Intensity Discharge (HID) lamps need to be driven by a low frequency AC signal, because high-frequency drive signal may destabilize the lamp's arc due to existence of acoustic resonance, which is a known phenomenon in the art. Accordingly, an inverter driving an HID lamp must have a current source nature (as opposed to voltage source nature) such that its characteristics contribute to the stability of the lamp's arc. One way to implement a low-frequency driver is to utilize electromagnetic ballast that is based on a large inductor, which is placed in series with the power line voltage. An alternative and preferred approach is to generate the low frequency signal by a switch mode inverter. A typical prior art solution is illustrated in Fig. 1.